



COUNTY OF LOS ANGELES
Internal Services Department

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August 19, 2005

To: Each Supervisor

From: Dave Lambertson
Director

Subject: **STATUS REPORT – BOARD MEETING REMOTE TELECONFERENCING**

On July 19, 2005 your Board instructed the Internal Services Department (ISD), with the assistance of the Chief Administrative Officer (CAO), the Executive Officer, and other necessary departments to prepare a plan for providing teleconferencing technology at remote locations in each Supervisorial District, and to report to the Board within thirty (30) days with a plan including costs, proposed sites, and necessary policies and procedures.

This memo is to update your Board on the status of this effort. Given the complexity of the tasks, we will not be able to complete a detailed implementation plan within the thirty day time period. Another status report will be provided by September 19, 2005. In the interim, this report discusses activities to date.

General Approach

A work group consisting of representatives from the CAO, Executive Office, County Counsel, and ISD was convened on July 28, 2005 to address the various aspects involved in providing teleconferencing for Board meetings. The major areas of focus are:

- Technical Approach and Costs.
- Site Selection
- Operational Matters
- Legal Issues
- Funding

A discussion of each of these areas follows.

Technical Approach and Costs

This area deals with the technology solution to be employed to meet the objective of teleconferencing of Board meetings.

All members of the committee agreed that the quality of the teleconference should be at a television broadcast grade for both the remote sites as well as reception at the Hall of Administration. As such, an Internet based broadcast (i.e., streaming video) was not considered a viable option.

ISD neither provides nor has the required infrastructure (e.g., equipment, etc) to perform broadcast video. Therefore, the use of an outside vendor is required. ISD performed a technical analysis of the various approaches (see Attachment II) and believes that the most viable option is to use the services of the vendor, Network Television Time, Inc. (NTT) that currently provides broadcast services for Board meetings because:

- The remote system will need to interface with the system operated by NTT in order to provide for a seamless integration of the teleconference component of the broadcasts with the regular Board broadcast.
- There will need to be a single "director" function to ensure that broadcasts switch from the Hall of Administration location to the remote sites in a reliable and professional manner. The use of multiple vendors (i.e., one for the Hall and one for remote sites) would make achievement of this objective difficult.
- A single feed, from all sites, will make it easier to manage the streaming video feed that the County currently provides over the Internet.

NTT has provided the County with a proposal for an expanded system that is currently under review and ISD is currently in the process of validating the cost data as well as the proposed approach. NTT proposed implementation options ranging from a total cost of \$600,000 to approximately \$1,000,000, in addition to monthly recurring costs of \$20,000 to \$29,000. However, only when site selection is made will it be possible to determine accurate cost information. In addition, the costs do not include a back-up capability in case there is a failure in the broadcast feed. ISD is also examining solutions and the related costs for this functionality.

Site Selection

The Committee is working with the objective of establishing a teleconferencing site within each Supervisorial District. Site selection objectives will include:

- The prominence of the building in the community as well as public access.
- Operating hours of the facility
- Available meeting rooms
- The state of the building infrastructure (i.e., is the telecommunication infrastructure able to accommodate a broadcast capability).
- Building Security

Ultimately, site selection will significantly impact operational, technical, and cost implications. The timelines and costs for the deployment of teleconferencing cannot be finalized until the sites are selected. The Committee will be working with representatives from each Board office prior to finalizing our recommendations.

Operational Matters

In order to have active participation in the Board meetings from the teleconferencing sites, as opposed to merely viewing the meeting, a number of logistical issues have to be resolved.

- The Executive Office is developing procedures for public assistance, speaker protocol such as the swearing in process and the order of speakers, and document transmission from the remote sites.
- The task force is working with Executive Office staff to determine their security requirements for both proposed sites and for equipment located at the sites.
- It may be necessary to have specially trained staff at the remote locations during the Board meetings to operate the teleconferencing equipment.

Legal Issues

Legal matters relating to teleconferencing are under review by County Counsel. The Board may use teleconferencing "for the benefit of the public" in connection with any meeting or proceeding authorized by law. Any teleconferenced meeting must comply with all of the requirements of the Brown Act. Therefore, one concern is whether any interruption of the video or audio portion during a meeting would require that the proceeding be stopped or delayed pending restoration of the connection. As a result, the potential of a fully redundant system will also be explored.

Funding

One time costs are highly dependent on the sites selected. Rough estimates of the one-time costs range from \$600K to \$1 million. Recurring costs are not as site dependent; however, both one time and recurring cost would be much higher if redundant capability would be needed. In addition to the costs identified in the Technical Approach and Costs above, the costs of on-site staff need to be identified.

City Of Los Angeles Efforts

The work group met with the City representatives involved in establishing teleconferencing of City Council meetings and found that their current effort is limited to testing of a link for remote video from Van Nuys to City Hall. Their pilot teleconferencing is expected to begin in November. The County work group is reviewing the possibility of sharing infrastructure with the City, however it appears at this point that there is incompatibility between the system used by the City and the County's current broadcast system.

Conclusion

To this point, the task force has identified and resolved some of the issues surrounding teleconferencing. Attachment I outline the remaining steps to be taken in each of the major areas. As stated at the outset, the next status report will be on September 19, 2005. If you have any questions, please contact me or have your staff contact David Mayer, ISD Telecommunications Branch Manager, at (562) 940-2907.

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Attachments

c: Chief Administrative Officer
Executive Office, Board of Supervisors
County Counsel
Chief Information Officer

Teleconferencing Plan

Technical Approach and Costs

- Complete evaluation of possible technical solutions
- Complete validation of Network Television Times, Inc.'s technical and cost proposal
- Refine costs based on the actual sites selected and on the legal requirements related to the implications of any interruption of the teleconferencing
- Develop options based on the level of redundancy, quality of the broadcasts, display (screen/projection) options.
- Incorporate the technical costs into the final Implementation Plan for presentation to the Board

Site Selection

- Create initial list of possible sites by District
- Review the sites including willingness/ability of the site to accommodate the teleconferencing
 - The prominence of the building in the community as well as public access.
 - Operating hours of the facility
 - Available meeting rooms
 - The state of the building infrastructure (i.e., is the telecommunication infrastructure able to accommodate a broadcast capability).
- Review the refined list of sites with Board staff
- Finalize the sites for each District

Operational Matters

- Finalize the procedures for public assistance, speaker protocol such as the swearing in process and the order of speakers, and document transmission from the remote sites and develop one-time and on-going costs

- Determine the security requirements for both proposed sites and for equipment located at the sites and develop one-time and on-going costs.
- Determine if on-site technical assistance will be required to operate teleconferencing or other equipment necessary to conduct the Board meeting.
- Produce a report outlining all costs and integrate the report into the final Implementation Plan

Legal Issues

- Determine guidelines for Brown Act issues such as what happens if the teleconferencing is interrupted.
- Incorporate the impact of the guidelines into the Technical and Operational portions of the Implementation Plan

Funding

Develop a funding proposal for incorporation into the Implementation Plan.

- One-time funding
- On-going costs

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Teleconferencing Implementation Plan

Technical Analysis and Cost

1.0 Introduction

On July 19, 2005, the Board approved a motion directing ISD with support from the CAO, and the Board Executive Office to prepare a Plan to provide teleconferencing technology for Board meetings at one site located in each Supervisorial District, to enable the public to participate remotely in Board meetings.

This Teleconferencing Implementation Plan (TIP) defines a recommended strategy for design, integration and test, operation and maintenance of teleconferencing systems and networks to support this requirement. Also included are considerations for selection of a qualified video broadcast service provider to design, implement, and operate each of the five remote video teleconferencing sessions, and integrate each remote site audio/video feeds into broadcast quality television signals, compiled for display in the Board Hearing Room, and subsequent broadcast.

ISD served as technical lead to assess design alternatives and implementation options, which included an evaluation of ISD/ITS internal capabilities to perform the video teleconferencing functions. The investigation included interviews with video vendors to gauge their capabilities to provide video teleconferencing and broadcast television services, and rough order of magnitude pricing. Interviews were also conducted with Network Television Time, Inc./GovTV to evaluate their proposal, Digital System Technologies, Inc. to evaluate alternative video teleconferencing systems, and SBC to evaluate alternative options for high data rate (fiber optic) network services.

2.0 Purpose

This TIP describes a proposed strategy for transfer of broadcast quality color television signals (audio and video) from each of five designated remote locations to the Hall of Administration for display on large screen monitors in the Board Hearing Room. In return, the broadcast television signal would be transferred back to each remote location for display on a large screen monitor. The primary goal is to provide the capability for the public to participate in the County's Board Meetings, without having to travel long distances from their homes to the Hall of Administration.

This TIP describes the framework for the planning, engineering design, integration and test, operation and maintenance of color video cameras, audio systems, stage lighting, laptop PCs, telecommunications equipment, and high speed data circuits at each of the designated remote locations. Also included are recommended modifications to the Board Hearing Room systems to enable controlled integration of the individual broadcast quality television signals from each remote site, and the return of the broadcast television signal to each remote site.

This TIP also discusses options for providing remote site administration, including registration of public speakers, coordination and timing of speakers (via laptop), facility security, clean up, and the safeguarding of video cameras, monitors, and audio systems.

3.0 Scope

The focus of this TIP is to provide the public with responsive, remote access to the County's Board Meetings from designated meeting locations in each of the five Supervisorial Districts, using cost effective video teleconferencing technologies to provide broadcast quality television.

4.0 Teleconferencing Network Technologies

While the technologies that comprise today's video teleconferencing networks have been available for many years, significant developments contributing to the practical application of broadcast quality color television technologies have occurred during the past few years. There are several approaches to meeting the specified requirement for broadcast quality video teleconferencing:

4.1 Point-to-Point DS-3 Network Service

This approach requires that video teleconferencing signals be processed, to compress and encode signals for transmission over high data rate, point-to-point (fiber optic) networks. At the receiving destination, the compressed video signals are decompressed, resulting in broadcast quality television signals.

This option requires coder/decoder (codec) video processing systems at each location. Multiplex equipment to integrate audio/video signals and data traffic for transmission over leased (SBC) DS-3 Point-to-Point Network Service, at data rates approaching (45 Mbps) speeds, are also required at each location.

Because (SBC) DS-3 Point-to-Point Network Service is mileage sensitive, rates for this service tend to be higher than other fiber optic network services available. Also, this alternative is relatively complex, requires codecs and multiplex equipment at each location, and is therefore more expensive than other options considered.

4.2 Switched Metro Ethernet (OPT-E-MAN) Service

The leased (SBC) Switched Metro Ethernet (OPT-E-MAN) video teleconferencing network service option would provide each end point with 10/100 Mbps standard Ethernet interface installed. Data rates would be determined based on quality of service required. Since OPT-E-MAN network service is not mileage sensitive, this option may have lower costs.

However, this approach also requires that the video teleconferencing signals be processed, to compress and encode signals, for transmission over the point-to-point OPT-E-MAN networks. At the receiving destination, the compressed video signals are decompressed, resulting in broadcast quality television signals.

It should also be noted that this alternative is also relatively more complex, since the video teleconferencing network requires codecs and Ethernet switch equipment to interface with the 10/100 standard Ethernet interface at each location. Due to the additional equipment required, this alternative is more expensive than other options considered.

4.3 Multi-Rate ISDN Network Service

Multi-rate ISDN (Integrated Services Digital Network) provides appropriate increments of switched digital bandwidth. City of Los Angeles is currently planning to utilize multi-rate ISDN to support video teleconferencing to remote City offices in the San Fernando Valley. Their video teleconferencing system is designed to provide public access to City Council meetings by traveling to a remote site near their home, rather than traveling to City Hall.

Their system is planned for operation later this year. During recent tests, City engineers observed that video image quality was acceptable (using VBrick video signal processors) but they experienced network transmission delays (approximately 1 second), and their system had limited echo suppression capability. City engineers indicated that their current system was probably an interim solution, and they would be looking at alternative video teleconferencing systems capable of supporting higher data rates in the near future.

Due to the bandwidth limitations, Multi-rate ISDN does not appear to be a viable option for the County's planned Teleconferencing for remote coverage of the Board Meetings.

4.4 TV-1 Point-to-Point Network Service

The (SBC) TV-1 Point-to-Point Network Service provides for the transmission of standard, uncompressed NTSC (National Television Standards Committee) television video over leased fiber optic circuits from remote sites to the central Television Switching Center (6100 Sunset Blvd.). At the Switching Center, the received television video signals can be switched and routed over similar TV-1 point-to-point, fiber circuits to their destination. Audio signals are similarly routed and switched over separate digital voice circuits. Note that this is the same network service option utilized by commercial broadcast television, and provides very reliable, high broadcast quality, video signals at relatively low cost.

The (SBC) TV-1 Point-to-Point Network Service is utilized by Network Television Time, Inc./GovTV, currently under contract to provide television services associated with the broadcast of County Board Meetings, conducted in the Board Hearing Room, at the Hall of Administration. This proposed design for video teleconferencing at the remote locations is an extension to the current television services utilized successfully for many years for the broadcast of County Board Meetings.

This proposed design is implemented without the need for digital video processing codecs or multiplex systems, thereby minimizing equipment costs. This proposed design utilizes (SBC) TV-1 Point-to-Point Network Service to provide highly reliable, broadcast quality video teleconferencing signals at relatively low cost. Furthermore, since this design is based on the transmission of standard, uncompressed NTSC television video, and digital audio signals routed over separate voice circuits, the received video and audio signals can be integrated in the studio for display on television monitors in the Board Hearing Room, and subsequent television broadcast. The broadcast television (video and audio) signals would also be routed for distribution to each remote video teleconferencing site.

4.5 Countywide Enterprise Network

The Countywide Enterprise Network provides high data rate network services to subscribers throughout the County. While the Enterprise Network is capable of providing DS-3 service, use of the Enterprise Network to support video teleconferencing for remote coverage of Board Meetings, would require the use of codecs and multiplex equipment at each site. In addition to the increased equipment costs at each location, the increased traffic could also interfere with services currently provided to subscribers.

Utilization of the Enterprise Network does not appear to be a viable option for the County's planned Teleconferencing for remote coverage of the Board Meetings. However, the Enterprise Network could be utilized in a supporting role, by providing E-mail service for the registration and coordination of public speakers.

4.6 Other Teleconferencing Systems

Other video teleconferencing systems were also considered, including systems offered by Digital System Technology, Inc. These systems are designed to provide point-to-point video teleconferencing for person-to-person conferencing, which is not comparable to broadcast quality television. These vendors provide video cameras, audio systems, codecs, and multiplex equipment, however, they typically do not provide leased network services, nor do they provide teleconferencing operations and maintenance support, nor do they provide television broadcast services.

Such video teleconferencing systems are not a viable option for the County's planned Teleconferencing for remote coverage of the Board Meetings.

5.0 Television Services – Remote and Interactive Board Meetings

Network Television Time, Inc./GovTV is currently under contract to provide television services associated with the broadcast of County Board Meetings, conducted in the Board Hearing Room, at the Hall of Administration. The planned extension of broadcast quality video teleconferencing at remote sites in each of five Supervisorial Districts will require minor modifications to the existing Network Television Time contract.

5.1 Remote Site - Teleconferencing Requirements

Each remote site will require installation and configuration of a color television camera, audio system, television monitor, stage lighting, laptop (Ethernet), and interface with SBC TV-1 Point-to-Point (fiber optic) network services. A total of two TV-1 Point-to-Point circuits will be required at each remote site, as well as two digital voice circuits, for the transmission and receipt of video and audio signals.

The laptop will be used to register and coordinate speakers using E-mail to/from Executive Office staff located in the Board Hearing Room. ISDN circuits may be utilized to provide a contingency backup audio capability.

5.2 Television Studio - Teleconferencing Network Services

The proposal prepared by Network Television Time, Inc./GovTV will require several modifications to the studio in the Board Hearing Room. First, five additional TV-1 Point-to-Point circuits will be required to receive video signals from each remote site, as well as five digital voice circuits, for the transmission and receipt of video and audio signals. Received video signals will be integrated for display on monitors in the Board Hearing Room. Additional monitors would be installed to enhance viewing. Audio signals will be incorporated into the audio system. The broadcast television signals will be routed via the existing TV-1 Point-to-Point fiber circuit (along with broadcast digital voice circuit) to the Television Switching Center for subsequent broadcast and distribution to each remote site.

5.3 Staffing Requirements

The proposal prepared by Network Television Time, Inc./GovTV does not require any additional staffing to operate the video teleconferencing systems at each remote site.

Staffing requirements for the administration of each remote site, including registration of public speakers, swearing of speakers, coordination and timing of speakers (via E-mail), facility security, clean up, and safeguarding of video cameras, monitors, and audio systems are addressed separately.

5.4 Contingency Plans

The Network Television Time, Inc./GovTV video teleconferencing proposal utilizes highly reliable TV-1 Point-to-Point fiber circuits for the transmission of standard, uncompressed NTSC (National Television Standards Committee) video signals. Digital voice circuits are utilized for the transmission of audio signals. Such circuits have proven to be very reliable, and are frequently utilized by commercial broadcast television networks, as well as the televised broadcast of Board Meetings over the past several years.

While the failure of the primary video and audio circuits is unlikely, the proposal provides for ISDN circuits for contingency backup audio. Additional savings can be achieved if these circuits are not needed.

5.5 ADA Compliance

The proposal prepared by Network Television Time, Inc./GovTV provides for the purchase of additional headsets for the hearing impaired. A number of headsets will be distributed to each remote video teleconferencing site.

5.6 Advance Notice of Special Needs

Citizens with special needs, who wish to participate in remote site video teleconferencing shall be advised to provide advanced notice, if they require assistance for the disabled, language translation, or special handling for documents, site drawings, or project plans.

6.0 Teleconferencing Installation Expense

The proposal prepared by Network Television Time, Inc./GovTV provides two options. The first option utilizes DS-3 Network Services. The second option utilizes TV-1 Network Services.

6.1 Network Television Time Proposal (DS-3 Network Services)

This option utilizes SBC DS-3 Network Services to provide high data rate point-to-point fiber circuits from the Board Hearing Room to each of the five designated remote locations. Note that this option requires codecs and multiplex equipment at each location, which increases the overall cost. Note that the costs shown below are not to exceed costs for County purchase and NTT installation.

Teleconferencing (DS-3 Option) Equipment Cost:	\$ 672,185
Teleconferencing (DS-3 Option) Installation Cost:	\$ 340,000

Grand Total:	\$ 1,012,185
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Estimated Monthly Recurring Operational Expenses:	\$ 28,906
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(With DS-3 video transmission and ISDN audio backup circuits)

6.2 Network Television Time Proposal (TV-1 Network Services)

This option utilizes SBC TV-1 Network Services to provide high data rate point-to-point fiber circuits for the transmission of video signals to/from each remote site to the Television Switching Center. ISDN circuits are utilized for the transmission of audio signals to/from each remote site to the Switching Center. At the Switching Center, video and audio signals are routed over comparable TV-1 and ISDN circuits to the Board Hearing Room for integration and display, and subsequent television broadcast. Note that this option does not require codecs and multiplex equipment, which decreases the overall cost. The costs shown below are not to exceed costs for County purchase and NTT installation.

Teleconferencing (TV-1 Option) Equipment Cost:	\$ 425,000
Teleconferencing (TV-1 Option) Installation Cost:	\$ 175,000

Grand Total:	\$ 600,000
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Estimated Monthly Recurring Operational Expenses:	\$ 20,242.50
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(With TV-1 video transmission and ISDN audio backup circuits)

6.3 Evaluation of Alternative Options

While several video teleconferencing systems were evaluated, only the two alternative solutions submitted by Network Television Time, Inc./GovTV fully meet all requirements for broadcast quality video teleconferencing. Of the two options, the proposed solution which utilizes SBC TV-1 Network Services is clearly the best, and also the least expensive.

7.0 Recommendations and Conclusions

7.1 Network Television Time, Inc./GovTV Contract Modification

The proposal submitted by Network Television Time, Inc./GovTV offers several important advantages. First, their proposed design for video teleconferencing at the remote locations is an extension to the current television services utilized successfully for many years for the broadcast of County Board Meetings. Second, their proposed design eliminates codecs and multiplex systems, thereby minimizing equipment costs. Third, their proposal utilizes (SBC) TV-1 Point-to-Point Network Service to provide highly reliable, broadcast quality video teleconferencing signals at relatively low cost. Fourth, remote site video cameras, monitors, and audio systems shall be operated under the technical control of staff located in the television studio at the Hall of Administration. Since the current video cameras and audio systems in the Board Hearing Room are installed, operated, and maintained by Network Television Time technical staff, they are well suited to install, operate, and maintain remote site video cameras and audio systems.

Recommend modification of the existing Network Television Time, Inc./GovTV contract to enable installation, test, operation and maintenance of video teleconferencing systems, equipment, and network services, as specified in their proposal:

“Implementation Plan For Remote Two-Way Television Conferencing Of Board Meetings In All Five Districts”, REVISION #4, dated August 10, 2005.

Specifically the design option utilizing SBC TV-1 Fiber, as described on page 5.

Grand Total for County purchase of equipment and NTT installation: \$ 600,000

Also, the estimated operational expenses with SBC TV-1 fiber transmission of video, primary audio, and ISDN circuits for backup audio system, as described on page 7.

Total Estimated Monthly Expense: \$ 20,242.50

7.2 Preliminary Teleconferencing Project Schedule

The proposed Teleconferencing Systems and SBC TV-1 Point-to-Point Fiber circuits can be installed within ninety (90) days following Board of Supervisors authorization and modification of the existing Network Television Time, Inc./GovTV contract.

Following installation, four (4) weeks of testing are recommended to resolve any problems prior to transition to full operations of the video teleconferencing system.

7.3 Assumptions:

- a. Remote sites will be selected by the Board offices based on the following general criteria:
 - The prominence of the building in the community as well as public access. This would include local city government facilities and local community organizational facilities.
 - Operating hours of the facility
 - Available meeting rooms
 - The state of the building infrastructure (i.e., is the telecommunication infrastructure able to accommodate a broadcast capability).
 - Building Security
- b. SBC TV-1 Point-to-Point Fiber Services are currently available at or near each of the designated sites. Additional costs may be incurred if fiber needs to be extended, or if the site is out of the SBC service area.
- c. Countywide Enterprise Network service is available at each of the designated sites.

7.4 Issues and Concerns

- a. This investigation did not identify any technical issues that would preclude implementation of the video teleconferencing solution proposed by Network Television Time, Inc./GovTV, using SBC TV-1 fiber transmission of video, primary audio, and ISDN circuits for backup audio system.
- b. Personnel staffing for the administration of each remote site is a concern, however, it may be possible to identify County staff currently assigned to the remote sites to provide essential support during Board Meetings.
- c. Site security for the public safety at each remote site is a concern, however, the committee is working with the Sheriff's Security Operations Unit to determine the appropriate security measures and staffing. One possibility is to utilize County Police or other local law enforcement agency currently assigned to the remote sites to provide essential security during the Board Meetings.
- d. Safeguarding of installed color television cameras, monitors, audio systems, and laptop computers is a concern, however, it may be possible to mount these items in secure areas, or provide appropriate safeguards as needed.

8.0 Summary

This investigation examined several alternative solutions to meet the requirements to provide broadcast quality video teleconferencing to allow the public to participate in the County's Board Meetings, without having to travel long distances from their homes to the Hall of Administration.

The remote teleconferencing design proposed by Network Television Time, Inc./GovTV, utilizing SBC TV-1 Point-to-Point Fiber Services, is clearly the best available solution that meets all requirements, at the lowest price.

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